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U.S. Patent Application No. 09/825,582
Amendment dated October 3, 2003
Reply to Office Action of June 4, 2003

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): A method of making carbon foam comprising pyrolyzing a mixture comprising at least one pyrolyzable material in the presence of at least one oxidizing source and optionally at least one fuel source other than said pyrolyzable material to form said carbon foam, wherein said pyrolyzable material comprises coal, a carbohydrate, sugar, cellulose, or any combination thereof.

Claim 2 (original): The method of claim 1, wherein said at least one fuel source is present.

Claim 3 (currently amended): The method of claim 1, wherein said pyrolyzable substance material comprises coal.

Claim 4 (cancelled).

Claim 5 (currently amended): The method of claim 1, wherein said pyrolyzable substance material comprises at least one carbohydrate.

Claim 6 (currently amended): The method of claim 1, wherein said pyrolyzable substance material is sugar or cellulose.

Claim 7 (original): The method of claim 2, wherein said fuel source is a liquid or gas or combination thereof.

Claim 8 (original): The method of claim 2, wherein said fuel source is natural gas.

Claim 9 (original): The method of claim 2, wherein said fuel source is a hydrocarbon containing material.

Claim 10 (original): The method of claim 1, wherein said oxidizing source is air,

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oxygen, or both.

Claim 11 (original): The method of claim 1, wherein said oxidizing material is present in an amount which is between 0.05 and 0.75 of the amount needed to combust completely the pyrolyzable material and fuel; and the fuel is present in an amount such that its complete combustion consumes between 0 and 100 % of the oxidizable material.

Claim 12 (original): The method of claim 1, wherein said pyrolyzable material, fuel source when present, and oxidizing source are introduced sequentially in any order.

Claim 13 (original): The method of claim 1, wherein said pyrolyzable material, fuel source, and oxidizing source are added as a mixture.

Claim 14 (original): The method of claim 1, wherein said at least one pyrolyzable material is introduced into a combustion chamber by being dispersed in said fuel source when present or said oxidizing source or both.

Claim 15 (original): The method of claim 14, wherein said fuel source is a liquid.

Claim 16 (original): The method of claim 14, wherein said fuel source is a gas.

Claim 17 (original): The method of claim 2, wherein said fuel source and said oxidizing source are introduced into a combustion chamber prior the introduction of at least one pyrolyzable material and wherein said fuel source and oxidizing source are ignited prior to introducing said at least one pyrolyzable material into said chamber.

Claim 18 (original): The method of claim 1, wherein said at least pyrolyzable material is introduced by being dispersed in a carrier stream.

Claim 19 (original): The method of claim 18, wherein said carrier stream is an inert gas.

Claim 20 (original): The method of claim 18, wherein said carrier gas is a fuel source or an oxidizing source or both.

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Claim 21 (original): The method of claim 1, wherein said pyrolyzing occurs at a temperature of from about 300° C to about 1600° C.

Claim 22 (original): Carbon foam formed by the method of claim 1.

Claim 23 (original): Carbon foam formed by the method of claim 2.

Claim 24 (original): The carbon foam of claim 22, said carbon form having cells bordered by thin sheets, windows, struts, or combinations thereof.

Claim 25 (original): The carbon foam of claim 23, said carbon form having cells bordered by thin sheets, windows, struts, or combinations thereof.

Claim 26 (original): The carbon foam of claim 22, wherein said cells have openings between them.

Claim 27 (original): The carbon foam of claim 22, wherein said carbon foam is rigid.

Claim 28 (original): A thermal insulating material comprising the carbon foam of claim 22.

Claim 29 (original): A polymer compound comprising the carbon foam of claim 22, or fragments thereof.

Claim 30 (withdrawn): An electrode comprising the carbon foam of claim 22.

Claim 31 (withdrawn): A capacitor electrode comprising the carbon foam of claim 22.

Claim 32 (withdrawn): An elastomer compound comprising the carbon foam of claim 22, or fragments thereof.

Claim 33 (withdrawn): A fuel cell comprising the carbon foam of claim 22.

Claim 34 (withdrawn): A battery electrode comprising the carbon foam of claim 22.

Claim 35 (cancelled).

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At page 5 of the Office Action, the Examiner rejects claims 1-4, 7-14, 17-29, and 35 under 35 U.S.C. §102(b) as being anticipated by Ullmann's Encyclopedia of Industrial Chemistry (hereinafter, Ullmann).

The Examiner states that claims 1 and 10 of the present application recite, in part, a method of making carbon foam comprising pyrolyzing a mixture in the presence of at least one oxidizing source. The Examiner asserts that carbon foam and activated carbon are equivalent and then asserts that Ullmann, at page 126, column 2 describes the formation of carbon foam (activated carbon), wherein the oxidizing source is disclosed as oxygen. With respect to claims 2-4 and 35 of the present application, the Examiner asserts that Ullmann also describes coal as the fuel source. With respect to claims 7-9 of the present application, the Examiner asserts that Ullmann, at page 128, section 4.2.3 describes that the fuel source is natural gas.

The Examiner also states that Ullmann, at page 127, section 4.2.1 describes the limitation of claims 18 and 19 of the present application. The Examiner also cites different parts of Ullmann to reject claims 11-14 and 17-29 of the present application. For the following reasons, the rejection over Ullmann is respectfully traversed.

Claim 1 recites a method of making a carbon foam. As the Examiner should be well aware, the preamble of a claim can limit the scope of the claim if the preamble provides additional structural limitations to the claim. The claimed invention relates to a carbon foam; whereas Ullmann relates to activated carbon. An activated carbon clearly differs from a carbon foam. Carbon foam includes cell structures (bubble-like structures) within the carbon. In contrast, an activated carbon does not include the cell structures present in a carbon foam. One skilled in the art by reading the claims of the present application in view of the specification of the present application would know that a carbon foam differs from an activated carbon. Thus, one skilled in